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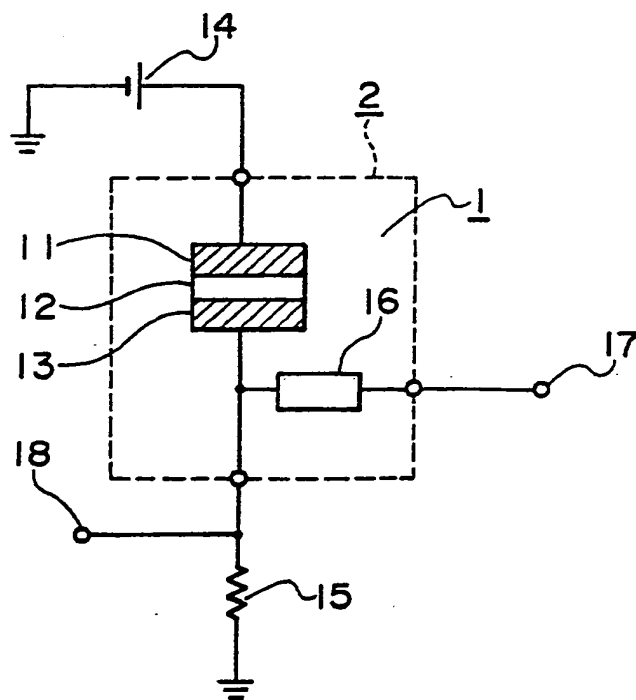
Switching device.

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A switching device is characterized by having a periodical layer structure of an organic insulator between a pair of electrodes and having memorizability with respect to switching characteristics. The layer

structure is formed of an amphiphilic compound according to the LB method.

FIG. 1





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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	APPLIED PHYSICS LETTERS vol. 31, no. 9, 1st November 1977, pages 553-555, New York, U.S.A.; CHUN CHIANG: "A model of switching and negative resistance phenomenon in organic thin film with dipoles". *	1,45,46	H 01 L 29/28 H 01 L 45/00
Y	idem	2-4,27, 30,31, 35,37, 38,40- 43,47, 48	
X	ELECTRONIC LETTERS vol. 21, no. 10, May 1985, pages 439-441, Stevenage, Herts, Great Britain; W. FULOP et al.: "Dielectric switching with memory in thin films of stearic acid." * whole document *	1,3,45, 46,53	
Y	idem	49-52, 54-58	TECHNICAL FIELDS SEARCHED (Int. Cl.4) H 01 L 29/28 H 01 L 45/00 B 05 D 1/12 G 11 C 11/22 G 11 C 19/30 H 01 B 1/12
Y	EP-A-0 077 135 (QMC INDUSTRIAL RESEARCH LTD.) * abstract; figure 1; page 19, lines 22-25 *	2-4,34, 41,42, 47,48	
Y	THIN SOLID FILMS vol. 134, no. 1-3, 20th December 1985, pages 89-99, Lausanne, Switzerland; B. BELBEOCH et al.: "Evidence of chain interdigitation in langmuirblodgett films." * pages 89,90; figure 1 * -/-	2,3,41, 43,54, 55,58	
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 20-02-1989	Examiner JUHL A.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)		
Y	FR-A-2 134 508 (ENERGY CONVERSION DEVICES) * figures 1-6 * ---	49-52, 56,57			
P,X	EP-A-0 232 829 (KANEKAFUCHI KAGAKU KOGYO KABUSHIKI KAISHA) * abstract; page 54, paragraph 3; claims * ---	1-3,41, 42			
Y	DE-A-3 242 712 (BAYER) * abstract * ---	27			
Y	JOURNAL OF MOLECULAR ELECTRONICS vol. 1, no. 1, July/September 1985, pages 3-17, Chichester, Sussex, Great-Britain; M. SUGI: "Langmuir-Blodgett films - a Course Towards Molecular Electronics: a Review." * pages 14,15; figures 12-14 * ---	30,35			
Y	JAPANESE JOURNAL OF APPLIED PHYSICS SUPPLEMENTS 15th Conference, 1983, pages 181-184, Tokyo, Japan; M. SUGI: "Organic Monomolecular Films and Their Applications." * abstract; page 183, column 2, paragraph 3 * ---	31			
Y	THIN SOLID FILMS vol. 133, nos. 1-4, November 1985, pages 1-10, Lausanne, Switzerland; H. NAKAHARA et al.: "Langmuir-Blodgett films of ferrocene derivatives with long alkyl chains." * page 2, paragraph 2 * --- -/-	37,38	TECHNICAL FIELDS SEARCHED (Int. Cl.4)		
The present search report has been drawn up for all claims					
Place of search BERLIN		Date of completion of the search 20-02-1989	Examiner JUHL A.		
<table border="0"><tr><td>CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</td><td>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document</td></tr></table>				CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document	T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document
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EP 87 30 9045

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	EP-A-0 067 691 (MATSUSHITA ELECTRIC INDUSTRIAL CO.) * page 3, lines 4-23 * -----	40	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 20-02-1989	Examiner JUHL A.
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